

OpenEI | OPENENERGYINFO

(OpenEI.org)



NREL/PIX 17613

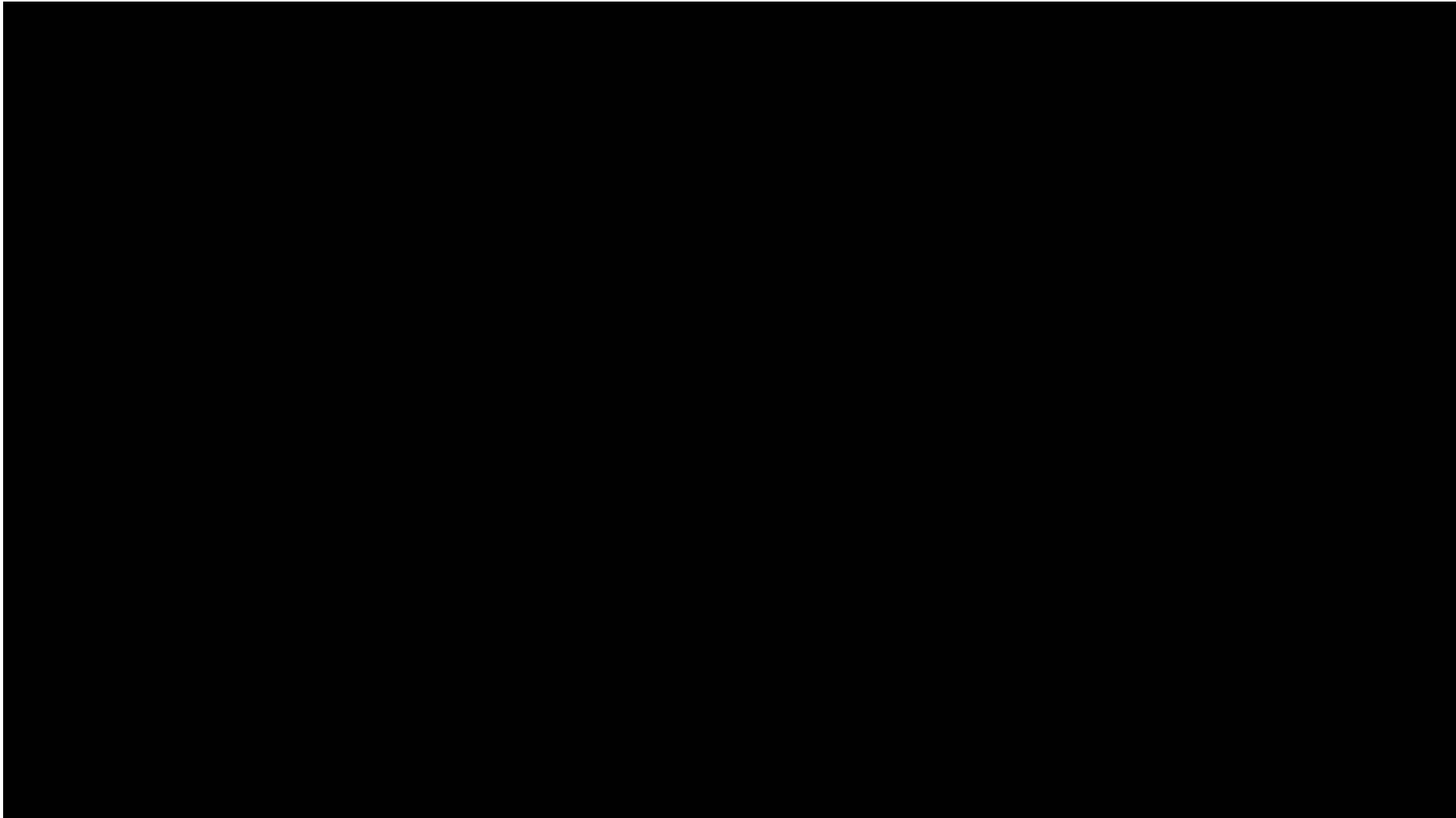
Debbie Brodt-Giles  
IMC  
April 2012

Open Energy Information - Facilitating  
access, use, and contribution of worldwide  
energy data and information

# Overview

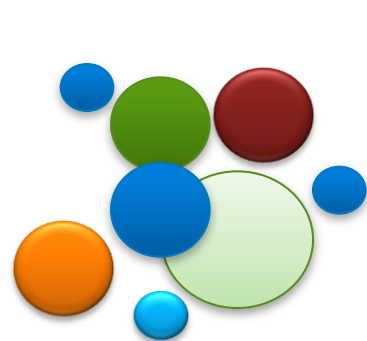
- Opportunity for shared energy information
- Strategic direction
- Alignment with the White House Open Government Initiative
- Collaborative approach
- Linked open data standards
- DOE Programs and Apps on OpenEI
- OpenEI data in action

# Video



*How can we  
share and leverage  
the world's vast  
energy digital assets  
to make  
better decisions?*

# The Collaboration Challenge



SILO Data



SILO Tools & Models



SILO Knowledge

Digital Tsunami  
Emerging

Integrated Tools &  
Models

Collective  
Intelligence

*We tend to gravitate to familiar SILOS.*

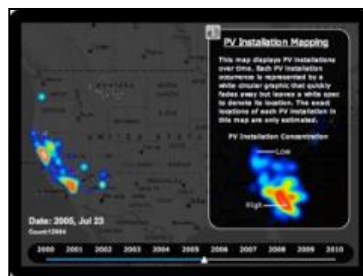


# What type of data are we talking about?

## Energy Data



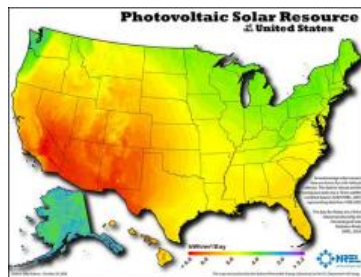
## Energy Tools



## Energy Docs



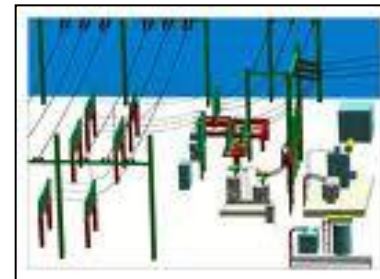
## Energy Maps



## Education



## Energy Models



*Published collective intelligence of the community*

# OpenEI Strategy

Catalyze the collection of the world's energy information to advance the adoption of renewable energy, fuel innovation and better inform energy decisions of policy makers, researchers, investors, and consumers



Linked Open Data for  
Improved access to energy-  
related information



Easy, legal, & scalable  
data sharing and ratings



Community support for  
contributions and  
collaboration



Assessments of  
information quality &  
provenance



Services for application  
development & derived  
data knowledge



Crowdsourced  
Dataset Generation

# Open Government Initiative

## *Government should be transparent.*

Transparency promotes accountability and provides information for citizens about what their Government is doing. **Information maintained by the Federal Government is a national asset.** My Administration will take appropriate action, consistent with law and policy, to **disclose information rapidly in forms that the public can readily find and use.** Executive departments and agencies should harness new technologies to **put information about their operations and decisions online and readily available to the public.** Executive departments and agencies should also **solicit public feedback to identify information of greatest use** to the public.

## *Government should be participatory.*

Public engagement enhances the Government's effectiveness and improves the quality of its decisions. **Knowledge is widely dispersed in society,** and public officials benefit from having access to that dispersed knowledge. Executive departments and agencies should **offer Americans increased opportunities to participate** in policymaking and to provide their Government with the **benefits of their collective expertise and information.** Executive departments and agencies should also **solicit public input** on how we can increase and improve opportunities for public participation in Government.

## *Government should be collaborative.*

Collaboration actively **engages Americans in the work** of their Government. Executive departments and agencies should **use innovative tools, methods, and systems to cooperate among themselves,** across all levels of Government, and with nonprofit organizations, businesses, and individuals in the private sector. Executive departments and agencies should **solicit public feedback to assess and improve their level of collaboration** and to **identify new opportunities for cooperation.**

Source: White House Memorandum on Transparency and Open Government, January 29, 2009

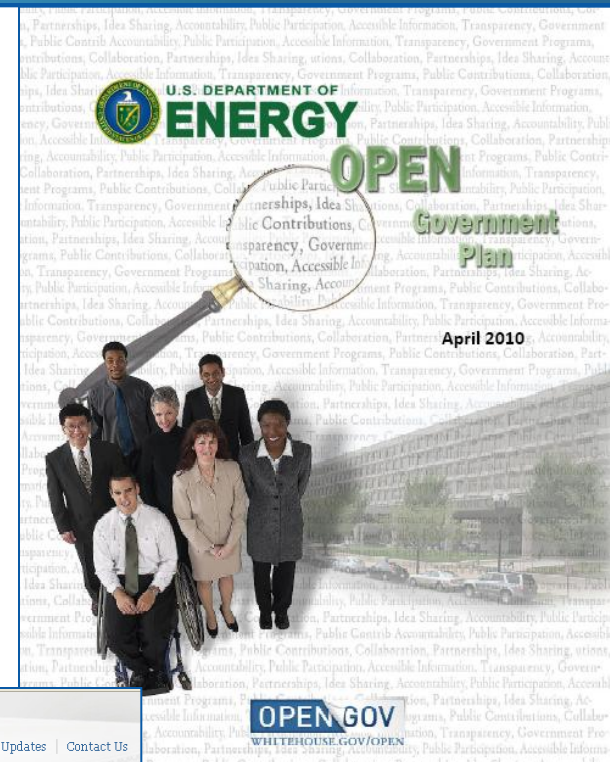


## Open Government Initiative

DOE issued **press release** to launch OpenEI as its Open Government Initiative (12/09)

Featured on **White House Innovations Gallery** (1/11)

Recognized by the White House as a **Flagship Open Government Initiative** (4/10)



DOE releases **Open Government Plan**, which highlights OpenEI (4/10)

## Notable Quotes



"This information platform will allow people across the globe to benefit from the Department of Energy's clean energy data and technical resources. The true potential of this tool will grow with the public's participation – as they add new data and share their expertise – to ensure that all communities have access to the information they need to broadly deploy the clean energy resources of the future."

**Dr. Steven Chu, Secretary of Energy**  
<http://energy.gov/news2009/8381.htm>












"Wow ... Energy linked data portal"

**Tim Berners-Lee, Inventor of the World Wide Web**  
[http://twitter.com/timberners\\_lee/status/7062198463](http://twitter.com/timberners_lee/status/7062198463)

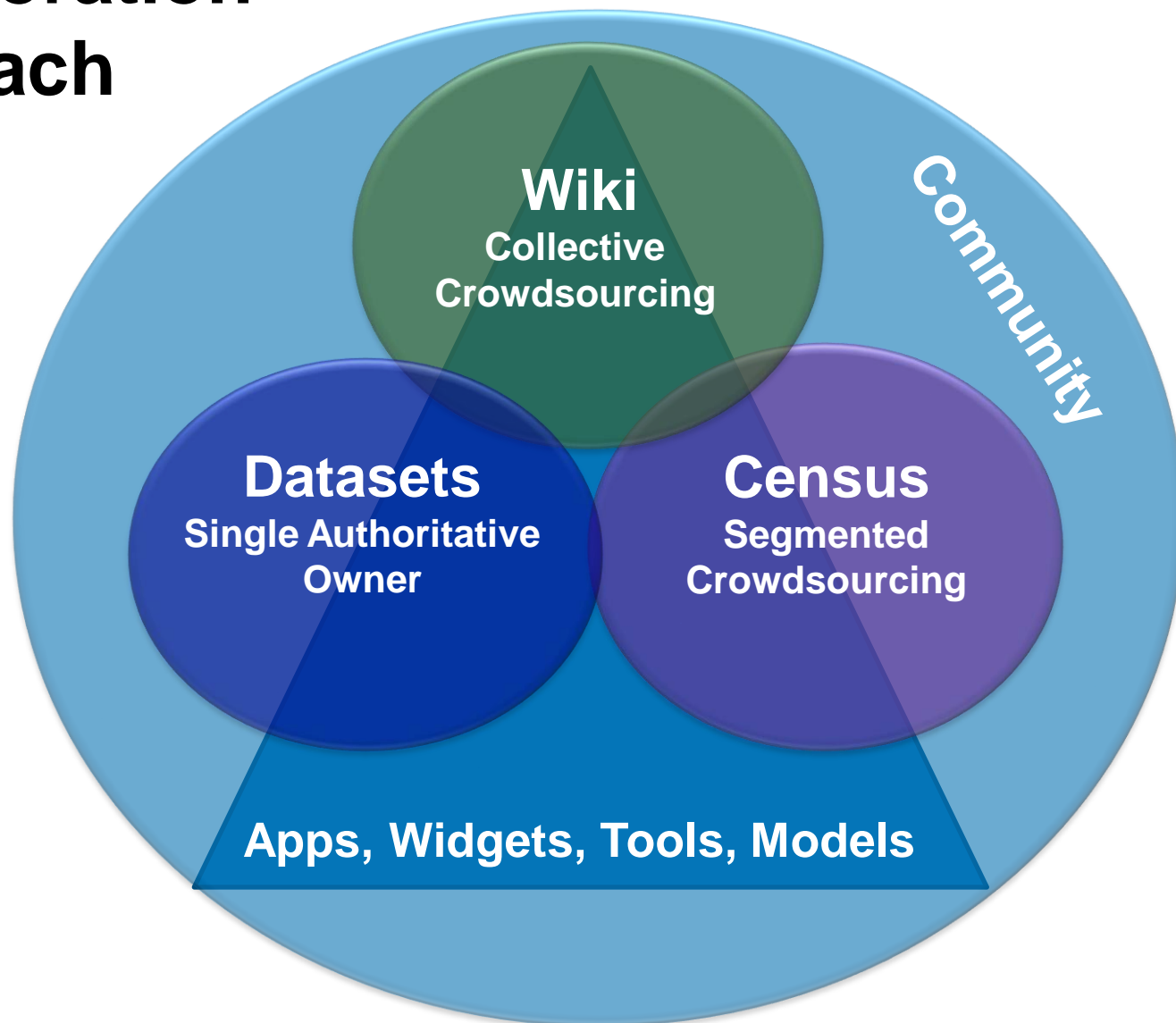


"Love that DOE is doing OpenEI.org"

**Tim O'Reilly, Web 2.0 Pioneer and Founder of O'Reilly Media**  
<http://twitter.com/timoreilly/status/11792155576>

	<b>Collective</b> <i>"The Wiki Way"</i>	<b>Segmented</b> <i>"The Census Model"</i>	<b>Authoritative</b> <i>"Single Owner"</i>
Create	World	Varies	World
Read	World	Varies	World
Update	World	Owner	Owner
Delete	World	Owner	Owner
Granularity	Element	Element	Item
Examples	  	  	  

# Collaboration Approach





# What is Linked Open Data?



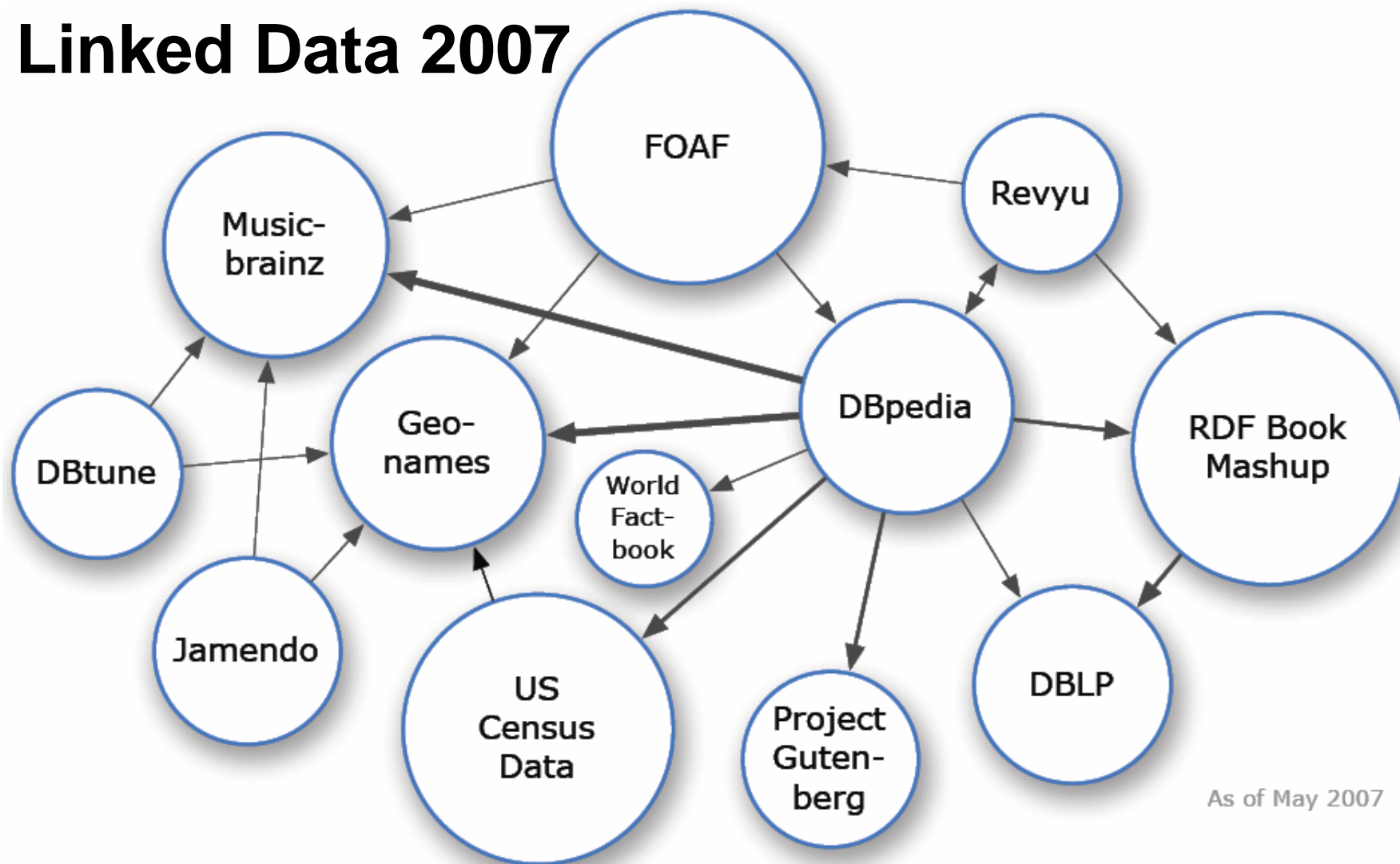
Typical Websites Without Linked Open Data



With Linked Open Data

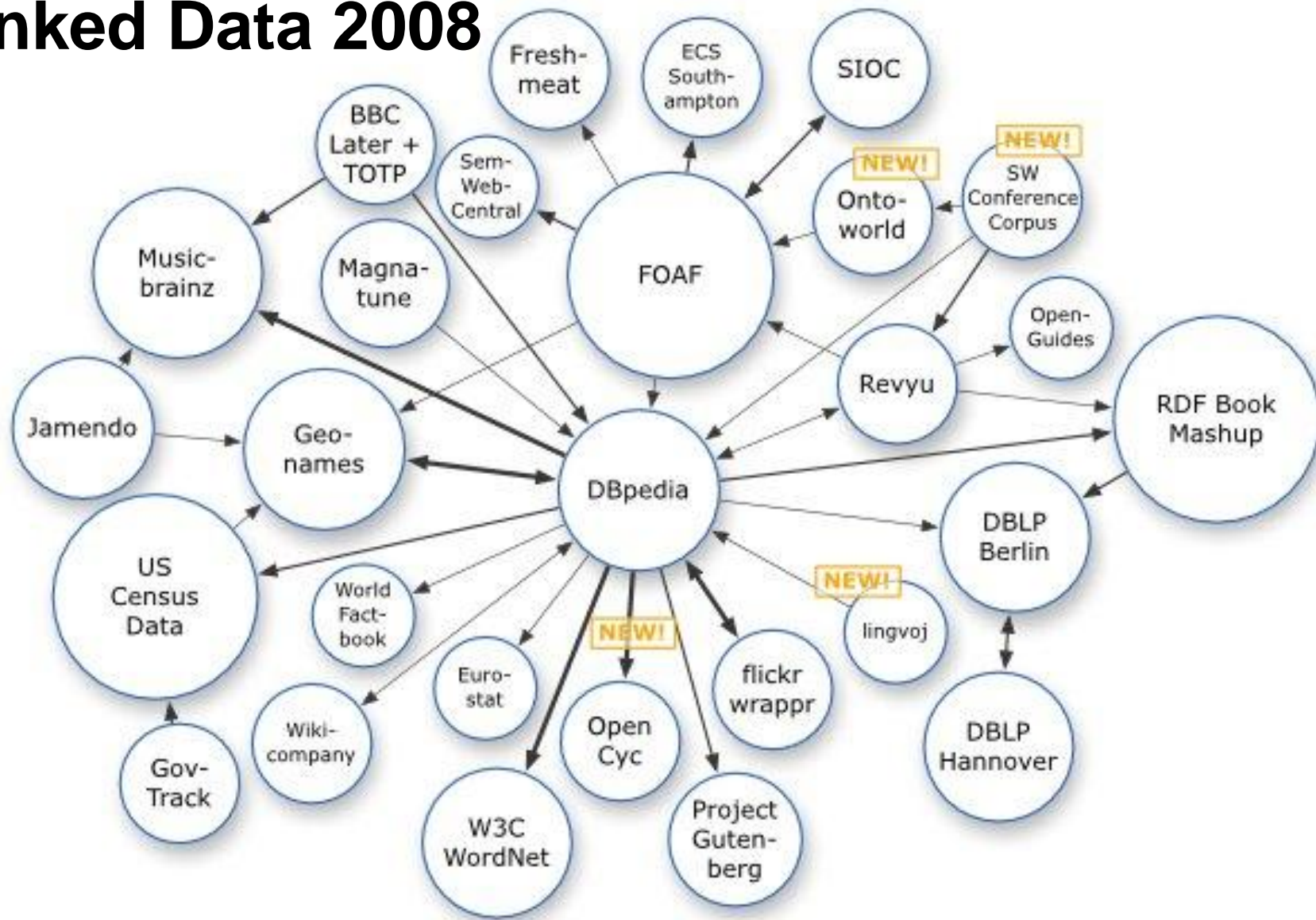


# Linked Data 2007

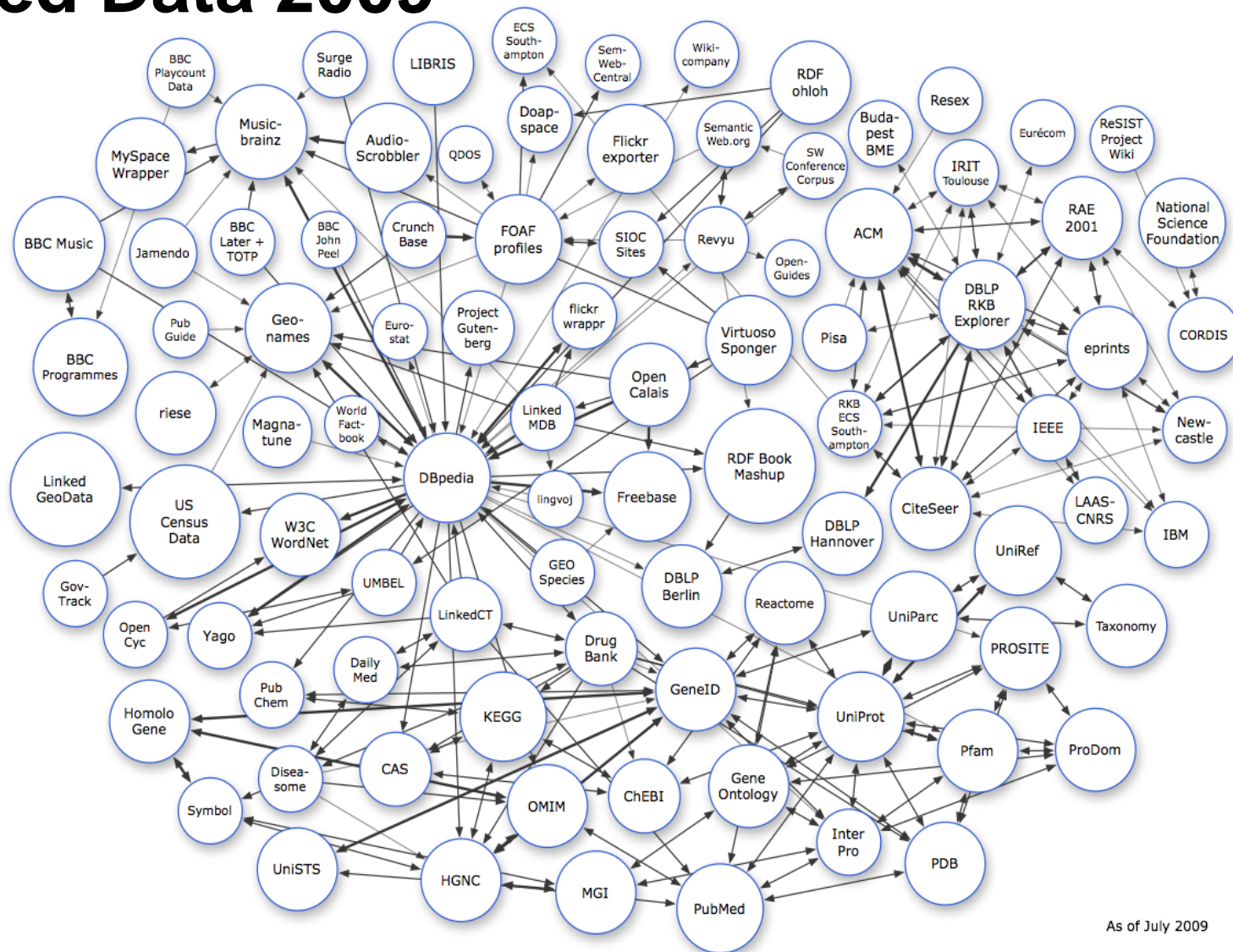


As of May 2007

# Linked Data 2008

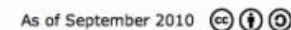


# Linked Data 2009



As of July 2009







# Linked Open Data on OpenEI

- more than 55,000 content pages
- more than 800 downloadable datasets
- regional gateways on a variety of energy-related topics

*Check out our Country Pages to see linked open data in action!*

Page Discussion Edit History

## Browse By Region

From Open Energy Information

Select a country or click on a

### Energy Maps featuring India

More Maps..

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Wiki Datasets Linked Data
Browse Page Actions View Get Involved User Help
Page Discussion Edit with form History

## India: Energy Resources

From Open Energy Information

Map data ©2011 Google, Mapabc Terms of Use

### Country Profile

Name	India
Population	1,028,610,328
GDP	\$1,843,000,000,000
Energy Consumption	19.95 Quadrillion Btu
2-letter ISO code	IN
3-letter ISO code	IND
Numeric ISO code	356
UN Region <sup>[1]</sup>	Southern Asia
<b>OpenEI Resources</b>	
Energy Maps	72 view
Tools	20 view
Programs	43 view
Energy Organizations	63 view
Research Institutions	2 view
<b>References</b>	
CIA World Factbook, Appendix D <sup>[2]</sup>	

### 2 News Articles

- India makes a sizable investment in Hydro
- India taps into its massive solar potential

India, officially the Republic of India; see also the official names of India, is a country in South Asia. It is the seventh-largest country by geographical area, the second-most populous country with over 1.2 billion people, and the most populous democracy in the world.



# Featured LOD Functionality

## Reegle Policy and Regulatory Overview

The screenshot displays the OpenEI website interface. The top navigation bar includes 'Wiki', 'Datasets', and 'Linked Data'. The main content area is titled 'India: Energy Resources' and features a map of India with state boundaries and names. Below the map, there is a text box describing India's geographical and demographic context. To the right, a sidebar lists various energy-related topics and links. The bottom section of the screenshot shows a detailed view of the 'reegle Policy and Regulatory Overview' page, which includes a table of electricity access statistics and a detailed text description of India's energy policy and regulatory framework.

**India: Energy Resources**

From Open Energy Information

India, officially the Republic of India; see also the official names of India, is a country in South Asia. It is the seventh-largest country by geographical area, the second-most populous country with over 1.2 billion people, and the most populous democracy in the world.

**reegle Policy and Regulatory Overview** [3] [edit]

**India Policy and Regulatory Overview** [edit]

**Extend network** [edit]

Population Access to Electricity (2008): 64.5%

Rural:	52.5%
Urban:	93.1%

The Integrated Energy Policy states that "Access to electricity is very uneven. Around 57% of rural and 12% of urban households i.e. 84 million households (over 44.2% of total) did not have electricity in 2000. Even those who have access to electricity suffer from shortages and poor quality of supply. Unscheduled outages, load shedding, fluctuating voltage and erratic frequency are common. Consumers and the economy bear a large burden of the consequences of this poor quality of supply." Currently, some 404.5 million people do not have electricity. The majority of electricity transmission infrastructure is operated at 132 kV or above, and five regional grids serve the country, connecting the Northern, Southern, Western, Eastern and North-Eastern regions.

**Energy procedure** [edit]

The policies and plans are developed on a five-year basis, apart from the annual plans. Each department/ ministry prepares plans, which go as inputs to the 'Five Year Plan' prepared by the Planning Commission of India. The government is also developing a scheme for energy efficiency trading as part of its National Action Plan on Climate Change. Under the proposed scheme of Perform, Achieve, Trade (PAT), specific industries would be required to commit to energy-intensity reductions, and the government will give trading certificates to entities successful in meeting their goals. Penalties for non-compliance are mentioned under the proposed plan, but not mandated. Ultra Mega Power Projects (UMPP) are a series of ambitious power projects planned by the Government of India. The ultra-mega-power projects, each with a capacity of 4,000 MW or above, are being developed with an aim to bridge the current supply gap. The UMPPs are seen as an

# Behind The Scenes, LOD at Work

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## India: Energy Resources

From Open Energy Information

Map Satellite Hybrid Terrain

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**reegle Policy and Regulatory Overview** [3] [edit]

**India Policy and Regulatory Overview**

Source: <http://www.reegle.info/countries/IN>

**SWERA** [edit]

View the Solar Wind and Enerav Resource Atlas for India.

**Country Profile**

Name	India
Population	1,028,610,328
GDP	\$1,843,000,000,000
Energy Consumption	19.95 Quadrillion Btu
2-letter ISO code	IN
3-letter ISO code	IND
Numeric ISO code	356
UN Region <sup>[1]</sup>	Southern Asia

**OpenEI Resources**

Energy Maps	72 view
Tools	20 view
Programs	43 view
Energy Organizations	63 view
Research Institutions	2 view

**References**

CIA World Factbook, Appendix D<sup>[2]</sup>

**2 News Articles** [edit]

- India makes a sizable investment in Hydro
- India taps into its massive solar potential

**43 Programs** [edit]

- UNEP-Low Carbon Transport in India
- WRI-India-Measurement and Performance Tracking (MAPT) Initiative
- Ecofys-India-Quantifying Emission Reduction Opportunities in Emerging Economies
- ESMAP-India-Options for Low Carbon

reegle profiles are consumed in real time using SPARQL

use of semantic concepts allows the correct profile to be pulled

SPARQL

**reegle Policy and Regulatory Overview** [3] [edit]

**India Policy and Regulatory Overview** [edit]

**Extend network** [edit]

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SPARQL Endpoint

Print page

Contact reegle

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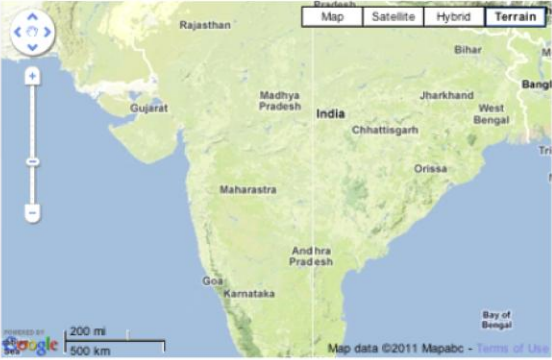
Wiki Datasets Linked Data

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Page Discussion Edit with form History

## India: Energy Resources

From Open Energy Information



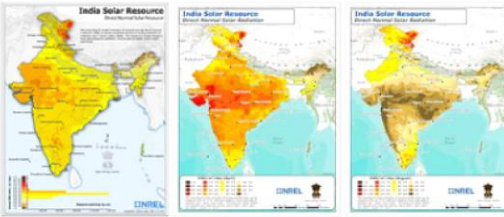
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### Energy Resources

Resource	Value	Units	Rank	Period	Source
Wind Potential	0	Area(km <sup>2</sup> ) Class 3-7 Wind at 50m	120	1990	<a href="#">NREL</a>
Solar Potential	9,877,095,200	MWh/year	8	2008	<a href="#">NREL</a>
Coal Reserves	66,800.07	Million Short Tons	5	2008	<a href="#">EIA</a>
Natural Gas Reserves	1,075,000,000,000	Cubic Meters (cu m)	26	2010	<a href="#">CIA World Factbook</a>
Oil Reserves	5,800,000,000	Barrels (bbl)	23	2010	<a href="#">CIA World Factbook</a>

### Energy Maps featuring India

More Maps...



[reegle](#) Policy and Regulatory Overview [3]

India Policy and Regulatory Overview

Source: <http://www.reegle.info/countries/IN>

Basic country info;  
semantically linked to  
external resources

Energy-related news in  
India

Tools/models/resource  
s relevant to India

Access to dozens of RE  
resource maps for  
India

Country Profile	
Name	India
Population	1,028,610,328
GDP	\$1,843,000,000,000
Energy Consumption	19.95 Quadrillion Btu
2-letter ISO code	IN
3-letter ISO code	IND
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UN Region	Southern Asia
OpenEI Resources	
Energy Maps	72 view <a href="#">#</a>
Tools	21 view <a href="#">#</a>
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References	
CIA World Factbook, Appendix D <sup>[2]</sup>	

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#### 43 Programs

- UNEP-Low Carbon Transport in India
- WRI-India-Measurement and Performance Tracking (MAPT) Initiative
- Ecolys-India-Quantifying Emission Reduction Opportunities in Emerging Economies
- ESMAP-India-Options for Low Carbon Development
- ClimateWorks-India-Low Carbon Growth Planning Study
- view all <#>
- Add a Program

#### 21 Tools

- Geospatial Toolkit
- India National Action Plan on Climate Change
- Nationally Appropriate Mitigation Actions
- Low-Carbon Growth Country Studies: Getting Started Experience from Six Countries
- Stand Alone Renewable Energy Systems Case Studies
- view all <#>
- Add a Tool

#### 63 Energy Organizations

- VIT TBI
- Vish Wind Infrastructure Ltd
- Turboatom TPS Projects Ltd
- TREC STEP
- Trans Tech Green Power
- view all <#>

Open Energy Information



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## Colorado: Energy Resources

From Open Energy Information

Map Satellite Hybrid Terrain

Colorado is a U.S. state that encompasses most of the Southern Rocky Mountains as well as the northeastern portion of the Colorado Plateau and the western edge of the Great Plains. Colorado is part of the Western United States, Southwestern United States, and the Mountain States. Colorado is the 8th most extensive and the 22nd most populous of the 50 United States. Colorado is a state in the [United States of America](#).

### Energy Production by Technology in Colorado

Fuel Source	Value	Units
Solar Power	16,530	MWh
Wind Power	2,942,133	MWh
Geothermal Power	0	MWh
Biomass Power	50,528	MWh
<b>Total Energy Production from Non-Hydro Renewables</b>	<b>3,009,191</b>	<b>MWh</b>
Hydro Power	2,058,215	MWh
HPS Power ?	108,658	MWh
<b>Total Energy Production from Renewables</b>	<b>5,067,406</b>	<b>MWh</b>
Coal Power	31,641,090	MWh
Gas Power	13,802,364	MWh
Petroleum Power	15,553	MWh

### State Profile

Name	Colorado
Governor	John Hickenlooper
Population	5,029,196
Median Household Income	\$56,993.00
Energy Consumption	Coming Soon

### OpenEI Resources

Energy Maps	40 <a href="#">view</a>
Energy Organizations	387 <a href="#">view</a>
Utility Companies	61 <a href="#">view</a>
Energy Incentives	105 <a href="#">view</a>

### 13 News Articles

- OpenEI News Feature on NREL News
- U.N. Secretary General tells NREL Clean Energy a Top Priority
- Vice President Joe Biden's visit to NREL
- Explore what's new on OpenEI
- Running the numbers: OpenEI can help you weigh the costs versus the benefits of making your home green
- [view all](#)

### 105 Energy Incentives

- SourceGas – Energy Efficiency Rebate Program (Colorado)
- Holy Cross Energy – WE CARE Rebates (Colorado)
- La Plata Electric Association – Renewable Generation Rebate Program (Colorado)
- Highline Electric Association – Renewable Energy Rebate Program (Colorado)
- Colorado Springs Utilities – Renewable Energy Rebate Program (Colorado)
- [view all](#)

### 61 Utility Companies

- Platte River Power Authority

## OpenEI's Colorado page for humans

## About: Colorado

An Entity of Type : States from Named Graph : <http://en.openei.org/lod/graph/wiki>

Property	Value
rdf:type	<ul style="list-style-type: none"> <li>swikt:Subject</li> <li>openei:wiki/Category-3APlaces</li> <li>openei:wiki/Category-3AStates</li> </ul>
rdfs:label	<ul style="list-style-type: none"> <li>Colorado</li> </ul>
rdfs:isDefinedBy	<ul style="list-style-type: none"> <li><a href="http://en.openei.org/wiki/Special:ExportRDF/Colorado">http://en.openei.org/wiki/Special:ExportRDF/Colorado</a></li> </ul>
swikt:page	<ul style="list-style-type: none"> <li><a href="http://en.openei.org/wiki/Colorado">http://en.openei.org/wiki/Colorado</a></li> </ul>
swikt:wikiNamespace	<ul style="list-style-type: none"> <li>0 (xsd:integer)</li> </ul>
swikt:wikiPageModificationDate	<ul style="list-style-type: none"> <li>2011-05-27 08:36:49 (xsd:date)</li> </ul>
openei:wiki/Property-3ANumberOfCompanies	<ul style="list-style-type: none"> <li>288.000000 (xsd:double)</li> </ul>
openei:wiki/Property-3ANumberOfNonCorporateOrganizations	<ul style="list-style-type: none"> <li>32.000000 (xsd:double)</li> </ul>
openei:wiki/Property-3ASEP_Funding	<ul style="list-style-type: none"> <li>49222000.000000 (xsd:double)</li> </ul>
openei:wiki/Property-3AOpenEI-2FPageDescription	<ul style="list-style-type: none"> <li>Colorado: energy resources, incentives, companies, news, and more.</li> </ul>
openei:wiki/Property-3AOpenEI-2FPageKeyword	<ul style="list-style-type: none"> <li>Energy Resources</li> <li>Colorado</li> <li>Energy Incentives</li> <li>Energy Companies</li> <li>Energy News</li> </ul>
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openei:wiki/Property-3AKML_XPath	<ul style="list-style-type: none"> <li>%2F%2Fplacemark%5BExtendedData%2FData%5B%40name%3D%22STATE%22%5D%2Fvalue%3D%22Colo</li> </ul>
openei:wiki/Property-3ANumberOfOrganizations	<ul style="list-style-type: none"> <li>387.000000 (xsd:double)</li> </ul>
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is openei:wiki/Property-3APlace of	<ul style="list-style-type: none"> <li>openei:wiki/Alternative_Fuel_Vehicle_Rebate_(Colorado)</li> <li>openei:wiki/Alternative_Fuel_Vehicle_and_Refueling_-_2D_Corporate_Tax_Credit_(Colorado)</li> <li>openei:wiki/Alternative_Fuel_Vehicle_and_Refueling_-_2D_Personal_Tax_Credit_(Colorado)</li> <li>openei:wiki/Aquila_Inc</li> <li>openei:wiki/Aquila_Inc_(Colorado)</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_April_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_February_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_January_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_July_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_June_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_March_2008</li> <li>openei:wiki/Aquila_Inc_(Colorado)_EIA_Revenue_and_Sales_-_2D_May_2008</li> <li>openei:wiki/Arkansas_River_Power_Authority</li> <li>openei:wiki/Aspen_-_2D_Green_Power_Purchasing_(Colorado)</li> </ul>

# OpenEI's Colorado page for machines



# Assembling New Data via “Crowdsourcing”



### “Does EIA publish electric utility rate, tariff, and demand charge data?”

No, EIA does not collect or publish data on electricity rates, or tariffs, for the sale or purchase of electricity, or on demand charges for electricity service, nor does EIA publish retail electricity rates or prices for peak or off-peak periods (sometimes referred to as time-of-use-rates).”

## EIA Frequently Asked Questions

<http://www.eia.doe.gov/tools/faqs/faq.cfm?id=20&t=3>



## Response: Crowdsourced Data Entry

[illegible]

## The Utility Rate Database

**Portland General Electric Co: 32 - TOU**  
From Open Energy Information

1. Basic Information 2. Time of Use Rate 3. Demand Charges 4. Tiered Rates

1 2 3 4 Next >>

Utility name: Portland General Electric Co  
Effective date: 2007/06/15  
End date if known:  
Rate name: 32 - TOU  
Sector: Commercial  
Description: - This is an optional rate  
- This utility rate information was derived from data collected in the fall of 2008.

Source or reference: [Utility\\_Rate\\_PGE\\_sched\\_032.pdf](#)  
Assume net metering (buy - sell): No  
Flat rate buy:  
Flat rate sell:  
Flat rate fuel adj:  
Fixed monthly charge: \$12.00000000

1 2 3 4 Next >>

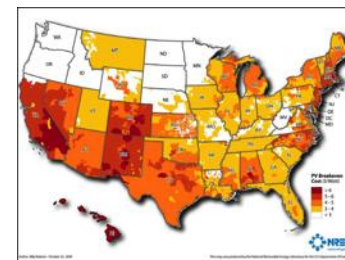
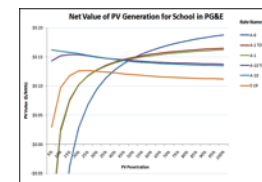
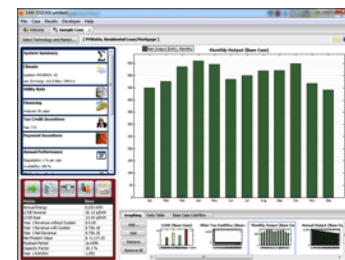
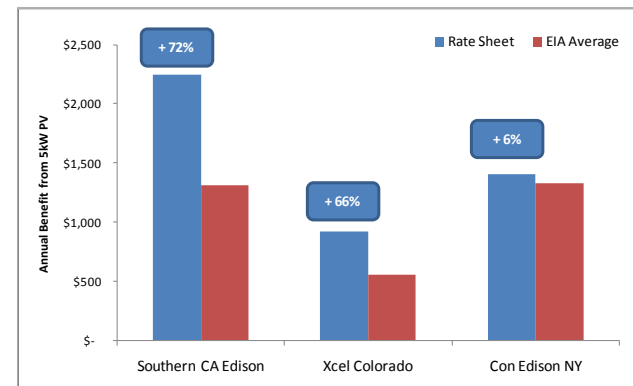
1. Basic Information 2. Time of Use Rate 3. Demand Charges 4. Tiered Rates

<< Previous 1 2 3 4 Next >>

	Buy \$/kWh	Sell \$/kWh	Fuel Adj. \$/kWh
Period 1	\$0.03248000		\$0.05949000
Period 2	\$0.05729000		\$0.05949000
Period 3	\$0.09745000		\$0.05949000
Period 4	\$0.03248000		\$0.05949000
Period 5	\$0.05719000		\$0.05949000
Period 6	\$0.09745000		\$0.05949000
Period 7			
Period 8			
Period 9			

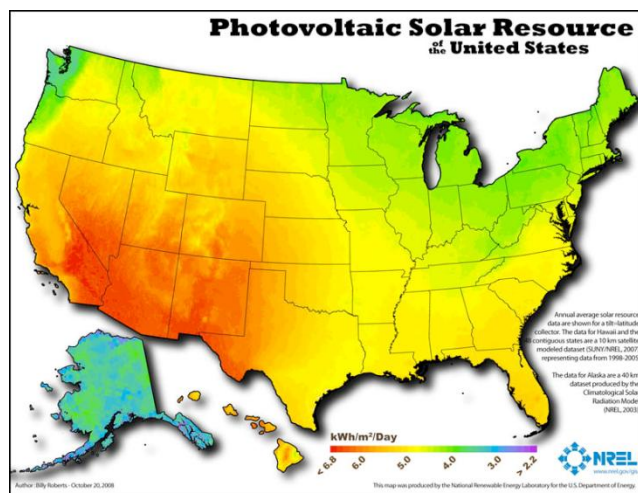
Weekday Schedule

	12 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Jan	1	1	1	1	1	3	3	3	3	2	2	2	2	2	2	2	2	3	3	3	2	2	1	1
Feb	1	1	1	1	1	3	3	3	3	2	2	2	2	2	2	2	2	3	3	3	2	2	1	1
Mar	1	1	1	1	1	3	3	3	3	2	2	2	2	2	2	2	3	3	3	2	2	1	1	
Apr	1	1	1	1	1	3	3	3	3	2	2	2	2	2	2	2	3	3	3	2	2	1	1	
May	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Jun	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Jul	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Aug	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Sep	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Oct	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	5	5	4	4	
Nov	1	1	1	1	1	3	3	3	3	2	2	2	2	2	2	2	2	3	3	3	2	2	1	1



**Maximizing the Value of Photovoltaic Installations on Schools in California: Choosing the Best Electricity Rates**  
Sean Ong and Paul Denholm

# Leveraging and Linking Existing Data



Name	Size	Last Modified
SUNY_098052455.csv.gz	572 KB	3/5/07 12:00:00 AM
SUNY_098052465.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052475.csv.gz	571 KB	3/5/07 12:00:00 AM
SUNY_098052485.csv.gz	569 KB	3/5/07 12:00:00 AM
SUNY_098052495.csv.gz	569 KB	3/5/07 12:00:00 AM
SUNY_098052505.csv.gz	568 KB	3/5/07 12:00:00 AM
SUNY_098052515.csv.gz	569 KB	3/5/07 12:00:00 AM
SUNY_098052525.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052535.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052545.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052555.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052565.csv.gz	571 KB	3/5/07 12:00:00 AM
SUNY_098052575.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052585.csv.gz	570 KB	3/5/07 12:00:00 AM
SUNY_098052595.csv.gz	570 KB	3/5/07 12:00:00 AM

## Data Upload:

No file chosen

Maximum Filesize: 256 MB  
Allowed Extensions: txt zip xml csv xls xlsx

No file chosen

Maximum Filesize: 256 MB  
Allowed Extensions: txt zip xml csv xls xlsx

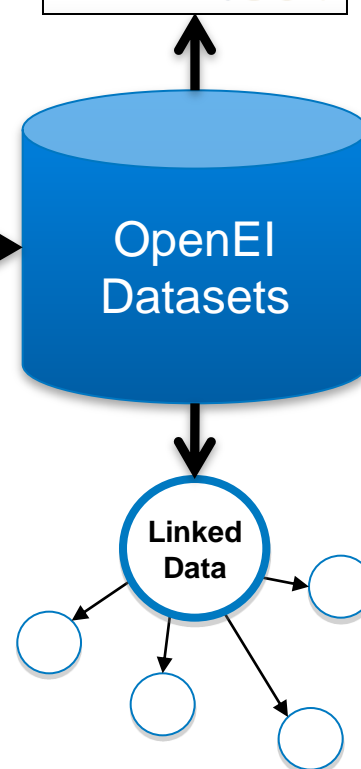
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Maximum Filesize: 256 MB  
Allowed Extensions: txt zip xml csv xls xlsx

No file chosen

Maximum Filesize: 256 MB  
Allowed Extensions: txt zip xml csv xls xlsx

DATA.GOV





# Incentives can be downloaded as used!

OpenEI | OPENENERGYINFO
Login | Sign Up

Wiki Apps Datasets Linked Data
Browse Page Actions View Get Involved Help

Gateway Discussion Edit History

Share this page on

## Incentives and Policies for Renewable Energy and Energy Efficiency

From Open Energy Information

Incentive Search

Add a new:

- Financial Incentive
- Rules, Regulations, & Policies Program

View All Incentive Programs (4135)

Rules Regulations & Policies (782)

Financial Incentive Programs (3353)

Incentives by Technology

- Biomass Related Incentives
- Geothermal Related Incentives
- Hydrogen Related Incentives
- Solar Related Incentives

### Map of Incentives in the United States

Number of incentives  
17 293

#### Incentives by Type

#### Energy Efficiency and Renewable Energy Incentive Programs

### About Incentives

At a time when renewable energy is in the spotlight, the incentives for producing, installing, and buying renewable energy technologies continue to grow by leaps and bounds. There are

### DSIRE™

Database of State Incentives for Renewables & Efficiency

#### Find Incentives that apply to you

☒ Renewable Energy
☒ Energy Efficiency

Select a state or territory

I am a...

Incentives Found  
2767

View Incentives

Powered by OpenEI.org

U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

IREC

NREL

# More than 120 Energy Apps on OpenEI!

OpenEI | OPENENERGYINFO
View login status by clicking here

Wiki Apps Datasets Linked Data

Browse
Go Search

Share this page on

OpenEI Apps
Find apps: 57 for the web 4 for your mobile device 63 for your desktop

Search

122 Energy Apps

**GREEN BUTTON APPS**

View, Access, and Share Green Button Apps

Use Green Button Apps to explore and share your energy use data!

If your energy provider displays the Green Button, click it to gain easy access to your energy use data.

Filter by app category

15 Featured
6 Green Button Apps
1 Community Generated

Filter by technology keyword

10 Renewable Energy
12 Biomass
9 Hydrogen
27 Energy Efficiency
26 Buildings
7 Industry
19 Transportation

Advanced Process Engineering

AGI-32

Agriculture and Land Use National

AgrometShell

Alternative Fueling Station Locator

Alternative Fueling Station Locator - Mobile

Applied Dynamic Analysis of the Global Economy

BCHP Screening Tool

BEopt

BEST-Cement for China

Biomass Scenario Model

BioPower Atlas and BioFuels Atlas

Building Energy Tools Software Directory

Building Life-Cycle Cost (BLCC) Program

CarbonSolve

Chalmers Climate Calculator

Climate Action Planning Tool

Climate Analysis Indicators Tool (CAIT)



# Green Button Apps and Info!



## OpenEI Apps

Find apps: 5 for the web ☒ 1 for your mobile device ☒

## Search

6 Tools filtered from 122 originally ([Reset All Filters](#))**GREEN BUTTON APPS**View, Access, and Share  
Green Button Apps

Use **Green Button Apps** to explore  
and share your energy use data!

If your energy provider displays  
the **Green Button**, click it to gain  
easy access to your energy use  
data.



## Filter by app category

1 ☒

- 14 Featured ☐
- 6 **Green Button Apps** ☒
- 1 Community Generated ☐

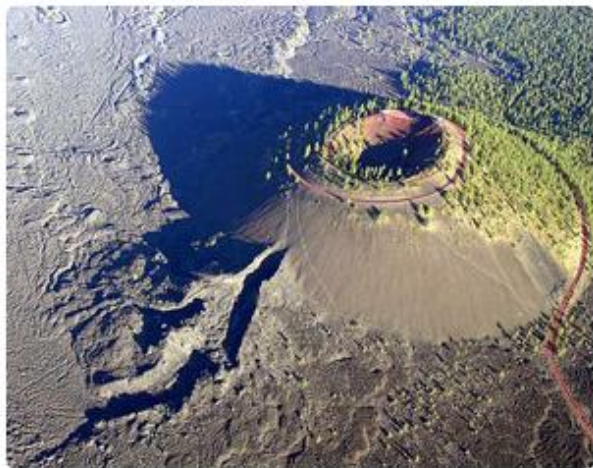
# Data, APIs, and Info for Developers

The screenshot shows the OpenEI website interface. At the top is a navigation bar with the OpenEI logo and 'OPENENERGYINFO' text. On the right of the bar are 'Login' and 'Sign Up' links. Below the bar is a secondary navigation menu with 'Wiki', 'Apps', 'Datasets', and 'Linked Data'. A search bar is located on the right side of this menu. Below the search bar is a row of buttons: 'Browse', 'Page Actions', 'View', 'Get Involved', and 'Help'. A 'Help page' button is also visible. To the right of these buttons is a 'Share this page on' section with social media icons for Facebook and Twitter, and a dropdown menu. The main content area is titled 'Energy Hackathon Resources (Data, APIs, examples) for Apps for Energy and Energy Mashups'. Below the title is a list of resources categorized into several groups:

- OpenEI resources
  - [OpenEI web services version 1](#) – sample queries for OpenEI's SPARQL endpoint, Ask queries and RESTful API for utility rate data
  - [OpenEI web services version 2](#) – newest iteration of OpenEI's web services in beta
    - [Incentive web service, includes DSIREusa.org data](#)
- Energy.Data.gov resources
  - [Energy.data.gov data and tools](#)
  - [Data.gov energy data resources \(governmental and non-governmental\)](#)
  - [Data.gov raw data with Socrata capabilities](#)
- NREL resources
  - [NREL's developer site](#) – links and documentation for a growing number of APIs for transportation, solar, electric areas
- REEGLE resources
  - [Clean Energy Information Portal](#)
  - [REEGLE data and developer resources](#)
- Tendril resources
  - [Tendril Connect APIs](#)
- Genability resources
  - [Genability Developer Network](#)
- People Power resources
  - [Appcessories](#)
- Examples of Apps for Energy
  - [Data.gov and RPI wiki, multiple examples and tutorials for using Data.gov data](#)
  - [Browsable list of apps for energy in the mobile, web and desktop space](#)
  - [Browsable list of energy apps with a focus on governmental data and apps](#)


# Geothermal Data Repository is on OpenEI

## Geothermal Data Repository



Submit your geothermal project and site data to the Geothermal Data Repository (GDR) using the link below. The GDR has been established to securely house data based on individual timelines, some of which have identified a specific release date. Please note:

1. All GDR data will eventually be made available to the public.
2. Data not intended for eventual public release should not be uploaded to the GDR.
3. Boise State University is serving as the data curator for the GDR and is also responsible for approving the data release schedules based on previous agreements.

If you have questions regarding this data submission process, please [contact the OpenEI webmaster](#) .

[Create an OpenEI account](#) or [login](#) to submit data



# Transparent Cost Database on OpenEI

[Contribute Data](#)

Share this page on [f](#) [t](#) ...

Transparent Cost Database

Generation

Showing:

[Historical](#) [Projections](#)

Report year:

2008 to 2011

Fuels

Vehicles

[Submit a report](#)
[Download](#)
[Sources](#)
[Methods](#)
[More information](#)

Overnight capital cost

Fixed operating cost

Variable operating cost

Capacity factor

LCOE

Box &amp; whisker

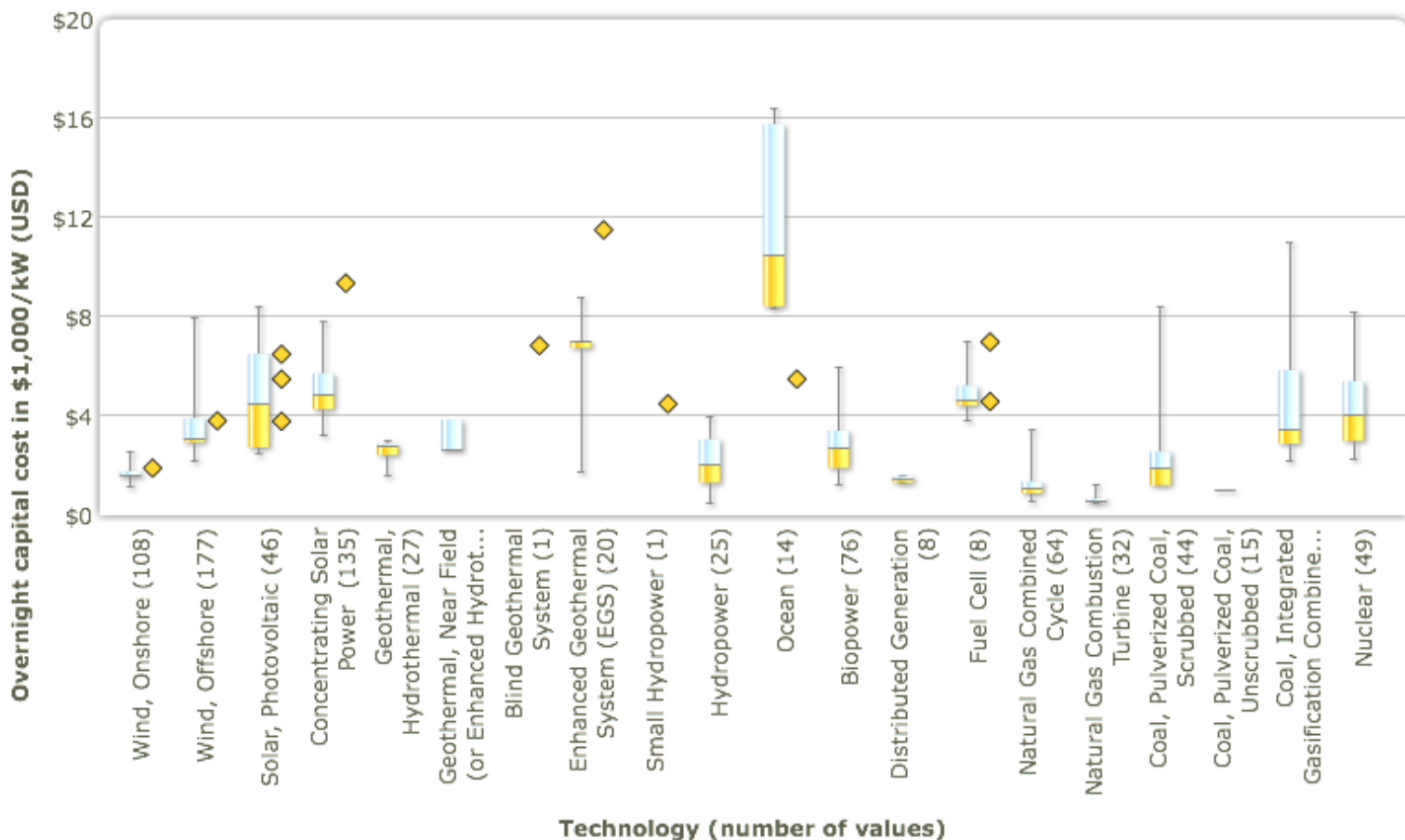


Scatter



Program Estimate

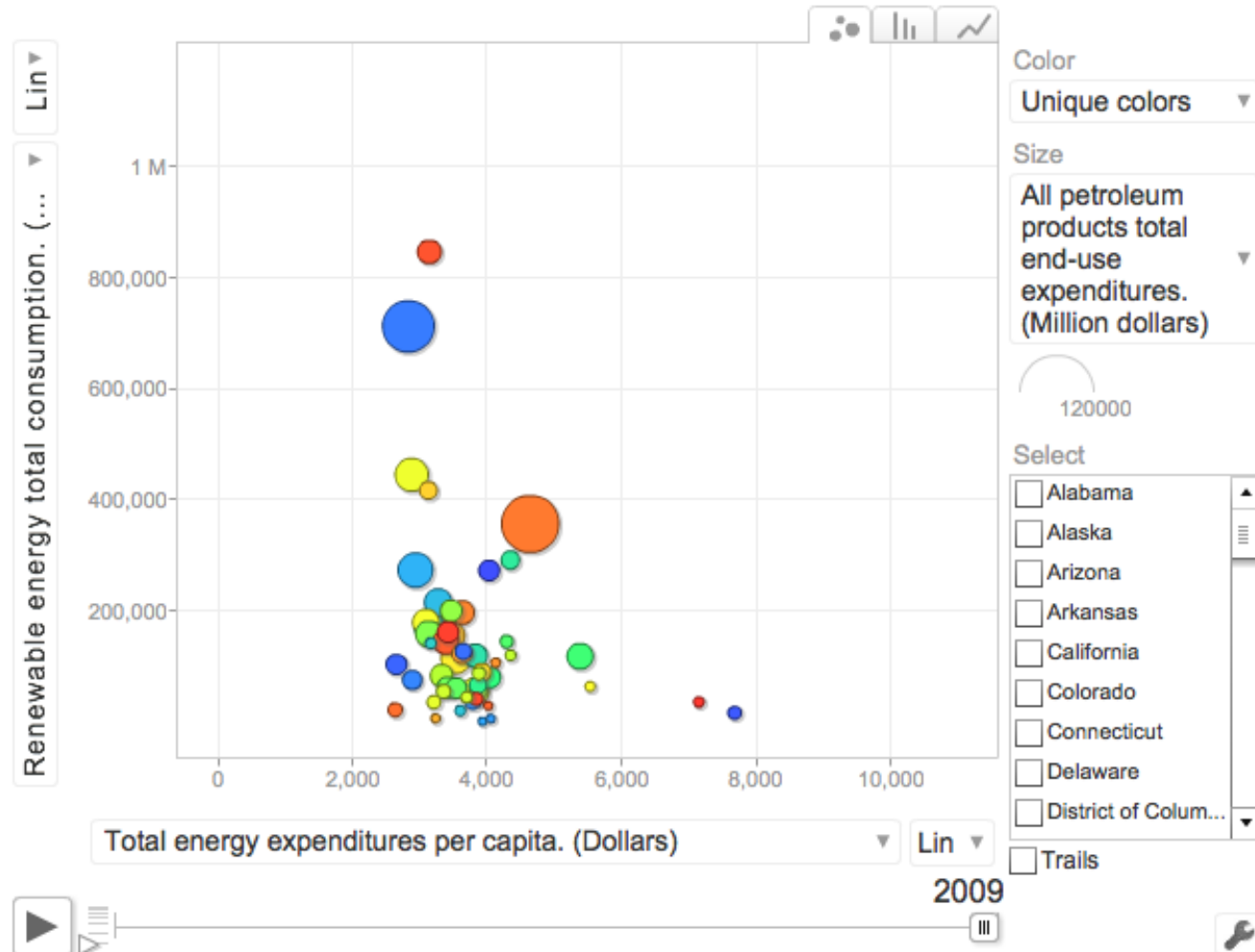
Single value (insufficient data to show plot)



# Time Series Data Visualizations

## Visualization of United States EIA SEDS data

From Open Energy Information



# Low Emission Development Strategies (LEDS)

OpenEI | OPENENERGYINFO

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Wiki Apps Datasets Linked Data

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Gateway Discussion Edit History

Search

Share this page on

Organize LEDS Process ▶ (1)

Assess Current Situation ▶ (2)

Develop BAU

Assess Opportunities

Analyze Options ▶ (3)

Evaluate LEDS Pathways

Prioritize Actions ▶ (4)

Implement and Monitor ▶ (5)


## Low Emission Development Strategies (LEDS) Gateway


This website supports the creation and implementation of country-driven, analytically rigorous low emission development strategies (LEDS). LEDS will enable countries to transition to low carbon economic development resulting in sustained growth in employment and investment, increased financial flows through carbon markets, reduced greenhouse gas (GHG) emissions, and other social, economic, and environmental benefits.


The resources here are designed to help you create your own LEDS. We've assembled several toolkits and resources and a complete LEDS development process based on proven best practices. The process is depicted in the diagram to your left, which also lets you navigate through the site. Start with the [overview of the LEDS process](#), or go directly to one of the five major process phases:


1. Organize the LEDS process
2. Assess current situation
3. Analyze options
4. Prioritize actions
5. Implement and monitor


## Toolkits


 Transportation

 Greenhouse Gas Inventory

 Clean Energy

 Land Use

 Financing

 Webinars



# Geothermal Exploration Best Practices on OpenEI

## Location

Power Plants/Projects  
Region

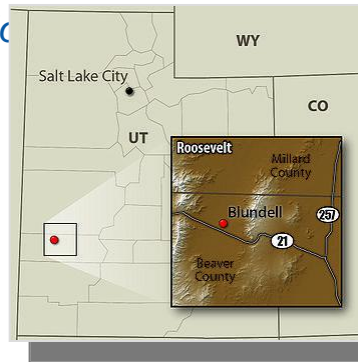


Geothermal Area →

Geothermal



Photo Credit: <http://www.pacificorp.com/es/re/blundell.html>



## Exploration Techniques

Category



Subcategory



Subcategory



Technique

*Remote Sensing*

*Active Sensors*

*Radar*

*InSAR*

(can use any number of subcategories in OpenEI)

## Activities

Source +

Reference (*Kennedy & Van Soest, 2006*)

Geothermal Area +

*Dixie Valley Area*

Exploration Technique

*Water Sampling*

## References

# Utility Access Map – Ready to Launch 3/22

OpenEI | OPENENERGYINFO

Wiki Apps Datasets Linked Data

Browse Page Actions View Get Involved Help

Search

Login | Sign Up

## Utility Data Access Map

Having access to your energy use data is a very important step in understanding your overall energy usage. Comparing historical data to your current usage is one way to see trends and determine ways for reducing electricity costs and improving overall efficiency. We asked all U.S. utility companies to tell us how accessible their energy use data is for both residential and commercial customers. The results are updated live based on the responses we have to date. As more utilities provide information, the utility boundaries will be automatically colored and the overall map will become more complete. Try searching for your utility to see your energy data access options.

Residential Customers

Commercial Customers

select a map

Benchmarking Data

No data

Tier 1

Tier 2

Tier 3

### State summary information

Colorado

☒ Public Service Co of Colorado

☒ City of Delta, Colorado

☒ City of La Junta, Colorado

☒ Arkansas River Power Authority

☐ Redlands Water & Power Company

☐ San Isabel Electric Assn, Inc

☐ San Luis Valley R E C, Inc

☐ Sangre De Cristo Elec Assn Inc

☐ San Miguel Power Assn, Inc

☐ Pueblo Valley P E A, Inc

### What is the meaning of the map's colors?

Commercial benchmarking

Tier 1

Basic data is available by meter or account. Customer does not have access to the last 12 months of data, cannot authorize third-party access to the data, and cannot download the data in a machine-readable format or spreadsheet.

Tier 2

Basic data is available by meter or account. Customer

Utilities, see something in error? [Contact us](#) for questions.

Consumers, check out our energy use informational pages [here](#).

What links here

Related changes

Special pages

Printable version

Permanent link

Browse properties

# ISGAN Smart Grid Glossary



## Smart Grid Glossary

 Add a Smart Grid definition

### A

- Adaptive Protection
- Adequacy
- Adjacent Balancing Authority
- Advanced Interrupting Switch
- Advanced Metering Infrastructure (Ami) / Smart Meters
- Adverse Reliability Impact
- Altitude Correction Factor
- Ancillary Service
- Ancillary Services Revenue
- Anti-Aliasing Filter
- Area Control Error
- Arranged Interchange

### F cont.

- Facility Rating
- Facts Device
- Fault
- Fault Current Limiter
- Fault Current Limiting
- Firm Demand
- Firm Transmission Service
- Flowgate
- Forced Outage
- Frequency Bias
- Frequency Bias Setting
- Frequency Deviation
- Frequency Error

### R cont.

- Ramp Rate(Schedule)
- Rated Electrical Operating Conditions
- Rating
- Reactive Power
- Real Power
- Real-Time Load Measurement And Management
- Real-Time Load Transfer
- Reallocation
- Receiving Balancing Authority
- Reduced Ancillary Service Cost
- Reduced Co2 Emissions
- Reduced Congestion Cost





- ✓ **Transparent**
- ✓ **Participatory**
- ✓ **Collaborative**